

Chatham's Dynamic Shoreline

Chatham Men's Club- January 10, 2020

Ted Keon, Dir. of Coastal Resources





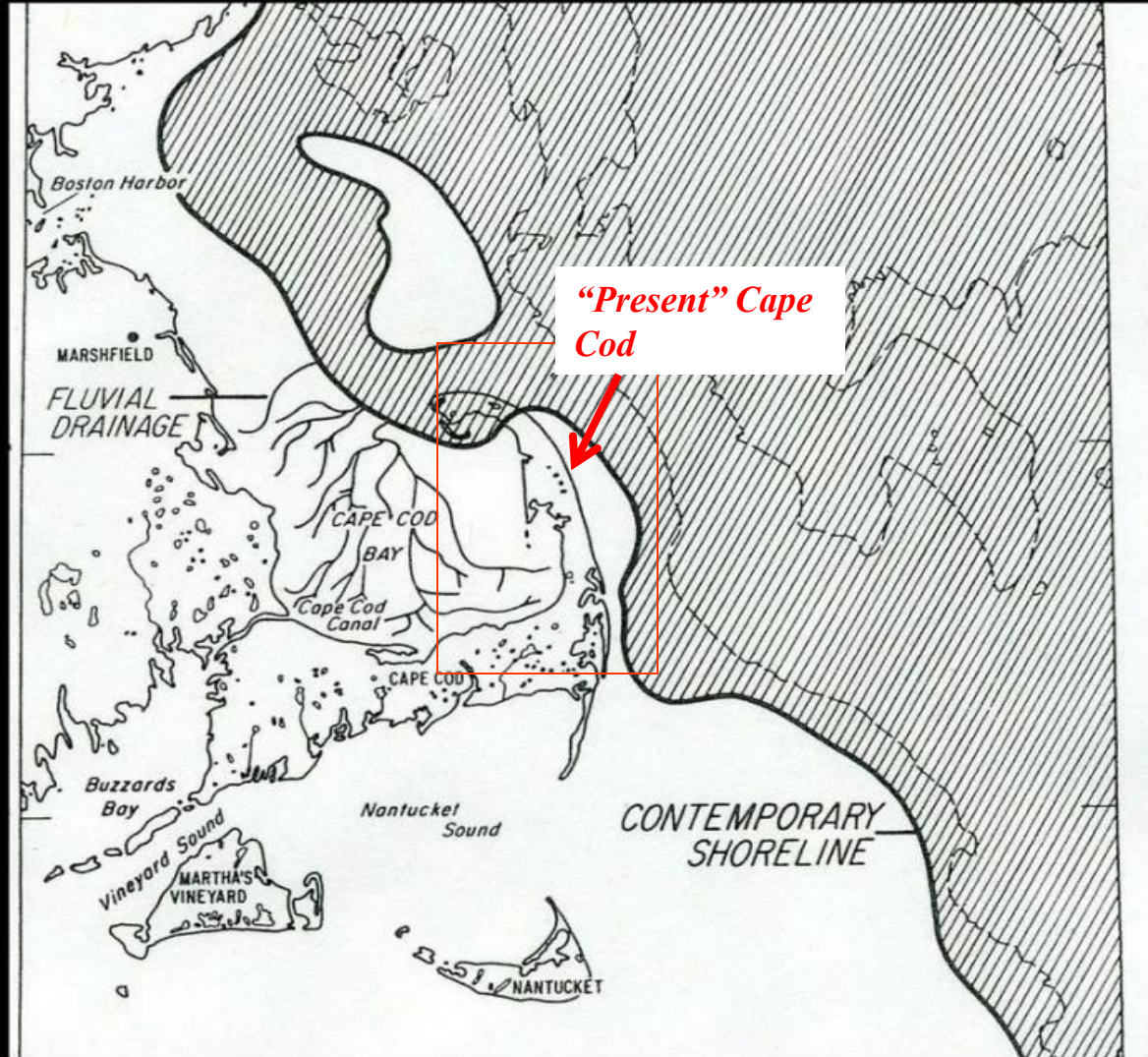
Gulf of Maine

Boston

Cape Cod

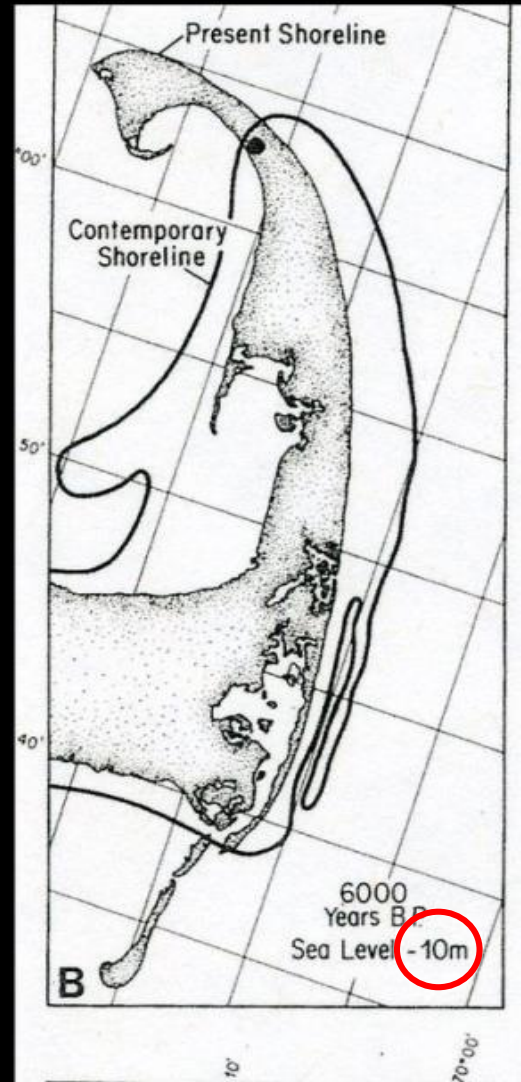
Georges Bank

Atlantic Ocean



12,000 years BP

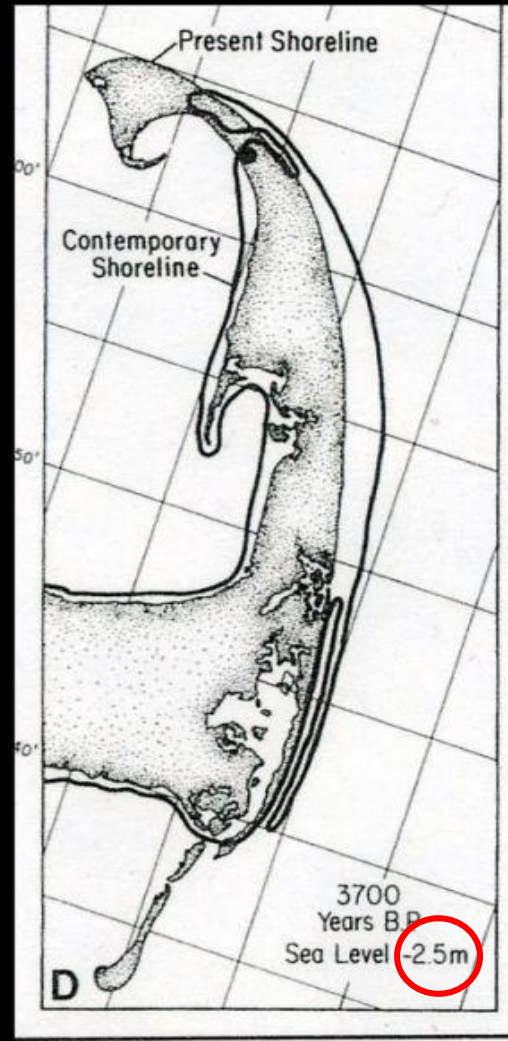
G. Giese



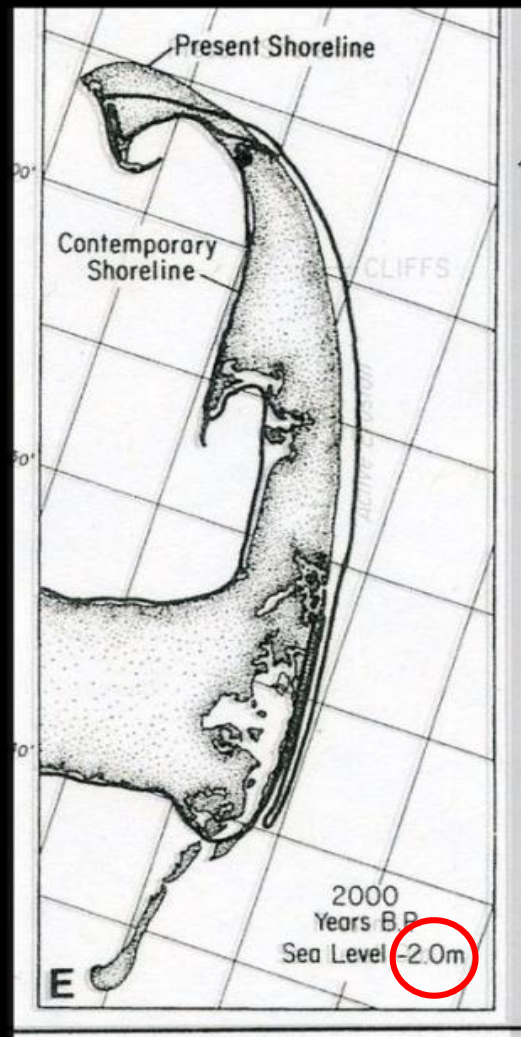
6,000 years BP



5,000 years BP

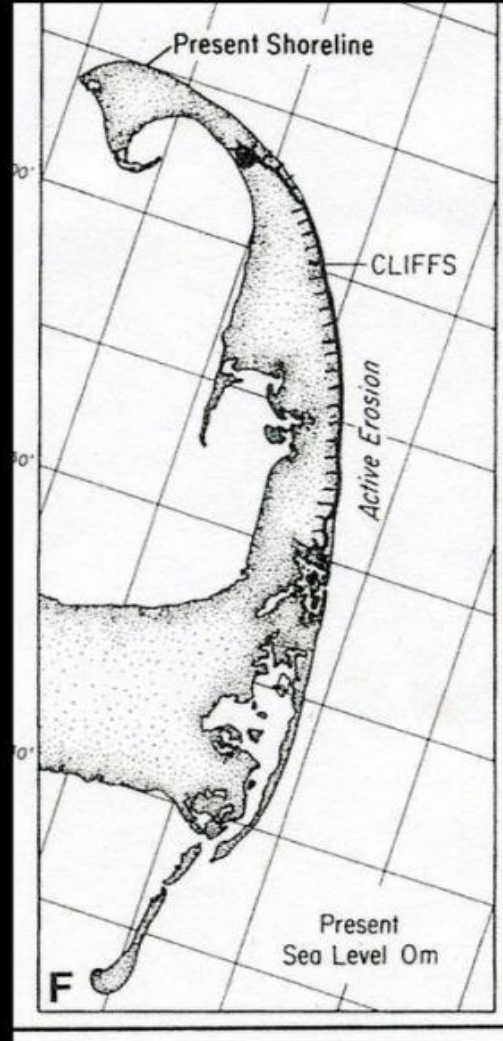


3,700 years BP



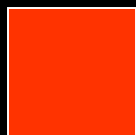
2,000 years BP

G. Giese

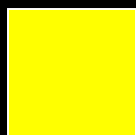


Present

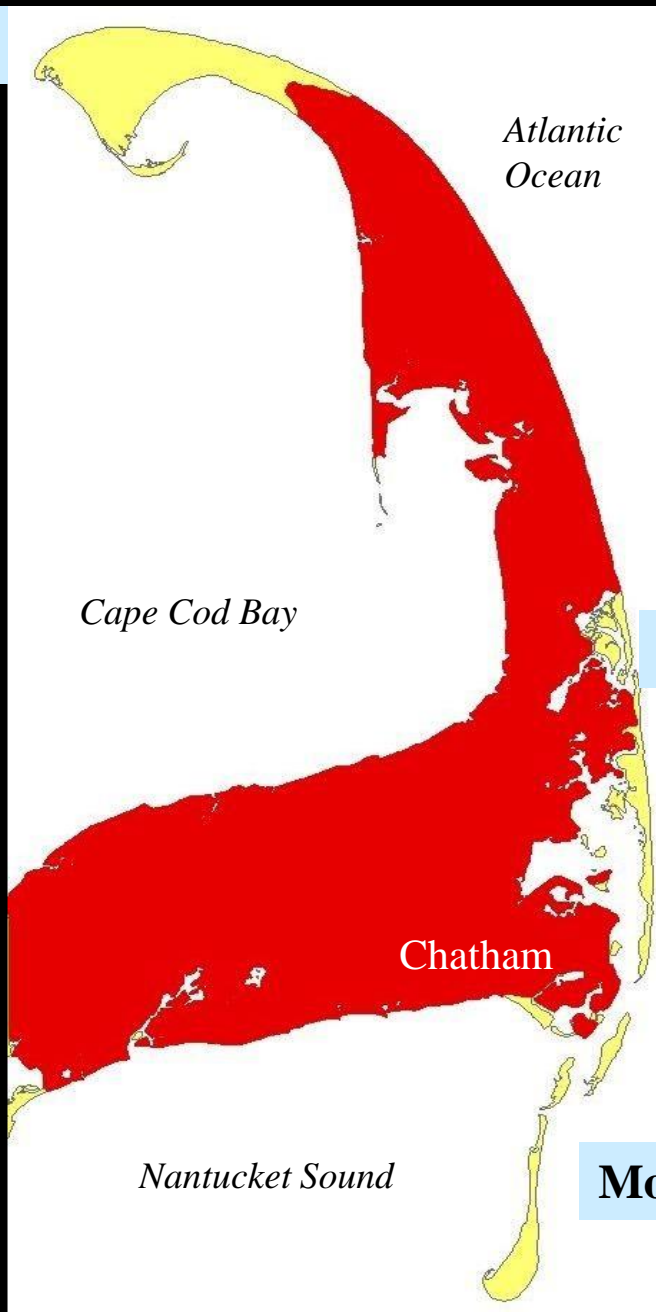
Provincelands



Glacial Deposits
(Pleistocene)



Coastal Deposition
(Holocene)



*Atlantic
Ocean*

Cape Cod Bay

Nauset Estuary

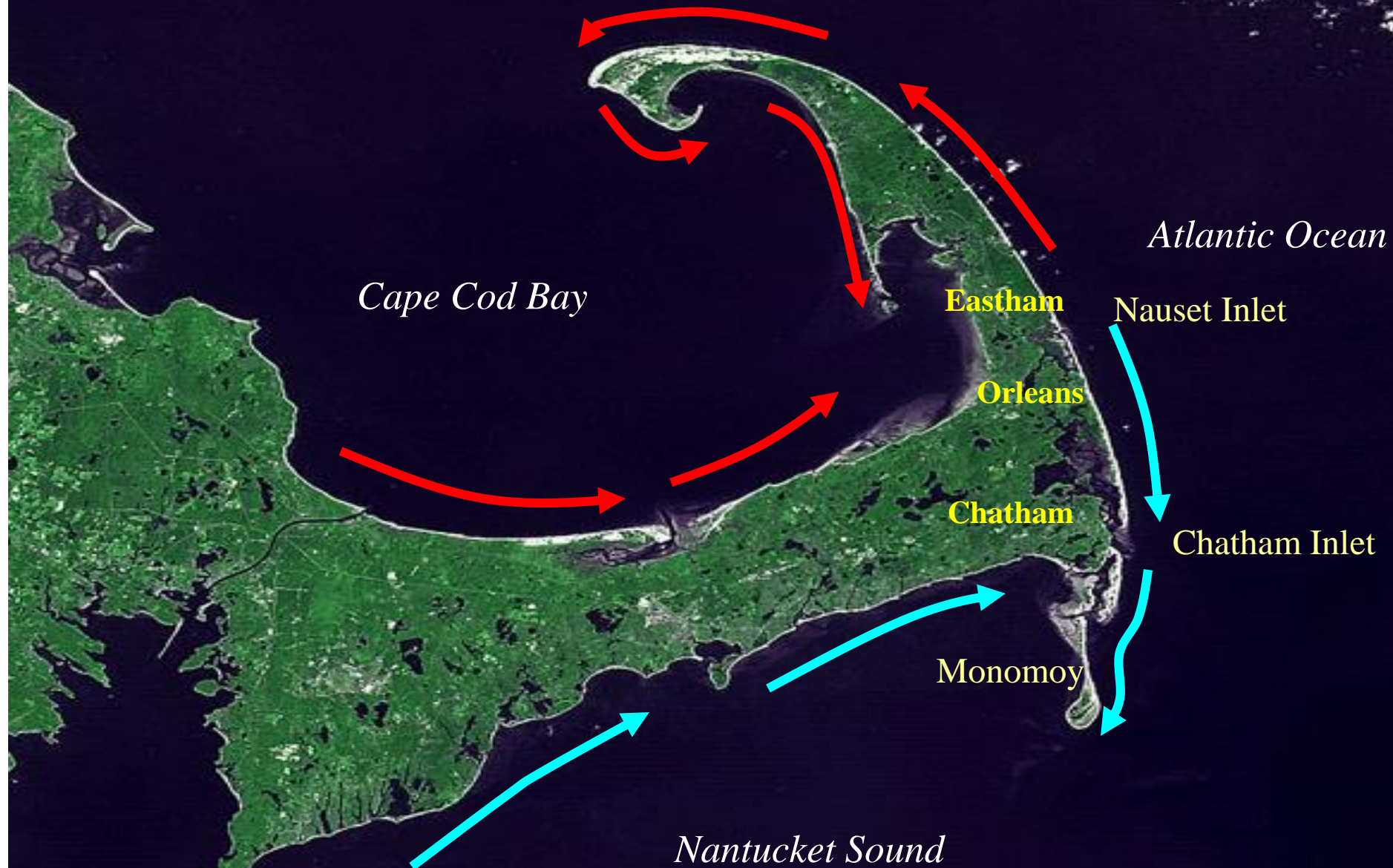
Nauset Beach

Chatham

Nantucket Sound

Monomoy

Regional Sediment Transport



Provincetown

Truro

Wellfleet




Basic Erosion process

Coastal Bank

Coastal Beach

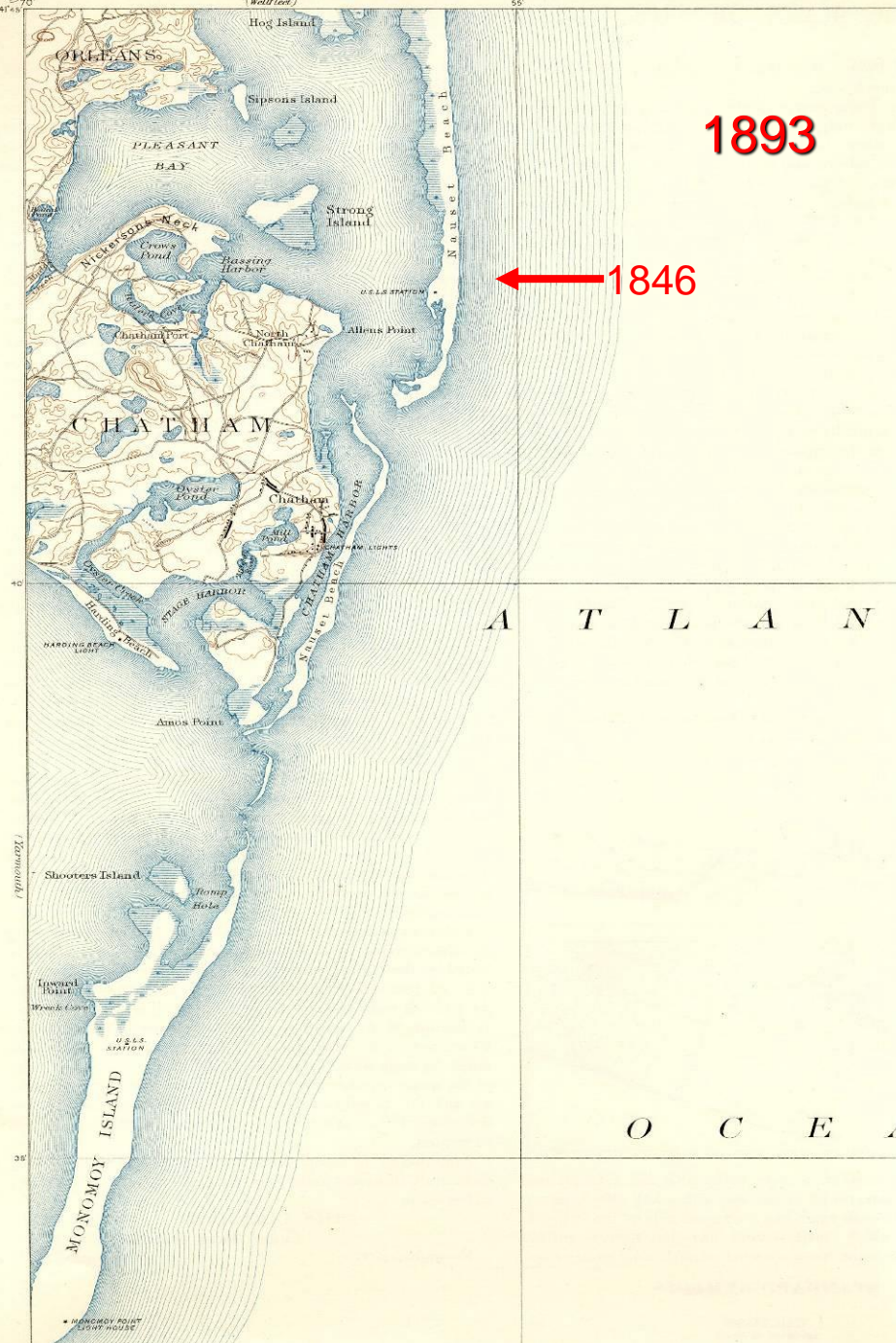
April 2013





Same area: 4 months later

Aug 2013



1893

← 1846

A T L A N T I C

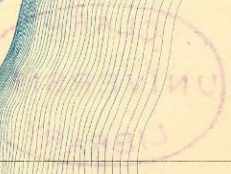
O C E A N



1917

A T L A N T I C

O C E A N



North Beach Island



July 2011

Wooden Shipwreck



Shed



November 2010

2011





Map from 1879

**Approximate location
of shipwreck**

Nauset Beach - 1980s



Atlantic Ocean

Monomoy
2006

Nantucket Sound

2013

2017

1987

Chatham
Harbor

Chatham

2007

2019





Shoreline Change:
1984 to 2018



2006

2007

2008

2012

2017

2018

2019

Chatham Inlet Development 2006-2019



Andrew Harding Lane

2019



2005



North Chatham



Linnell Lane Beach

North Inlet

2018

Spencer Kennard
www.capecodphotos.com



Minister's
Point

April 2017

Google Earth

June 2017

N



Minister's
Point

February 2018

Google Earth





Minister's
Point

Approx. 200ft. Recession

Linnell Lane

Spencer Kennard
www.capecodphotos.com

December 2019

Cow Yard (looking north)

March 2018



December 2019





June 23, 2019



October 5, 2019

Spencer Kennard
www.capecodphotos.com

Bassing Harbor

Spencer Kennard
www.capecodphotos.com

Atlantic Ocean

Nantucket Sound

South Beach



Fool's Cut

Morris Island



Little Beach

June 23, 2019





Little Beach

Morris Island

October 19, 2019



Little Beach

December 7, 2019

Spencer Kenna
www.capecodphotos.com

**CZM Coastal Community Resilience Grant Program
Chatham East-Facing Shoreline:
Coastal Resiliency and Management Assessment**

**Final
July 2019**



**Prepared for:
Town of Chatham, MA**

Prepared by:

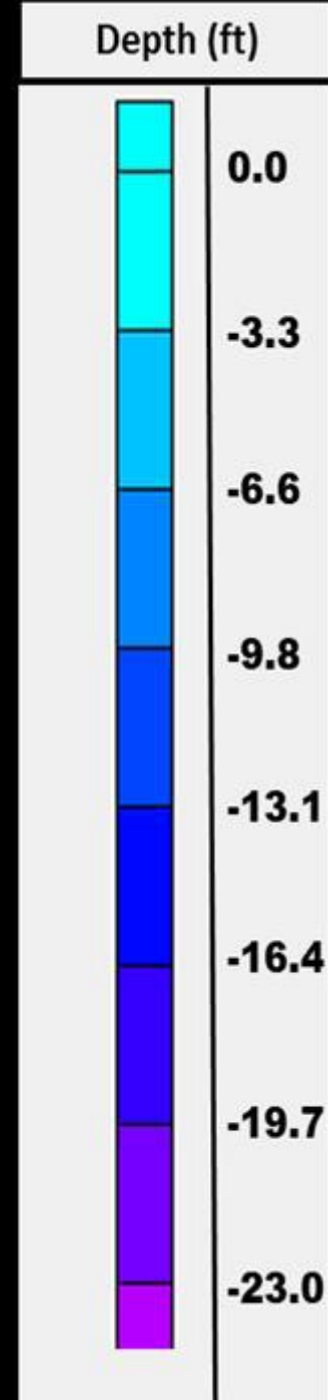
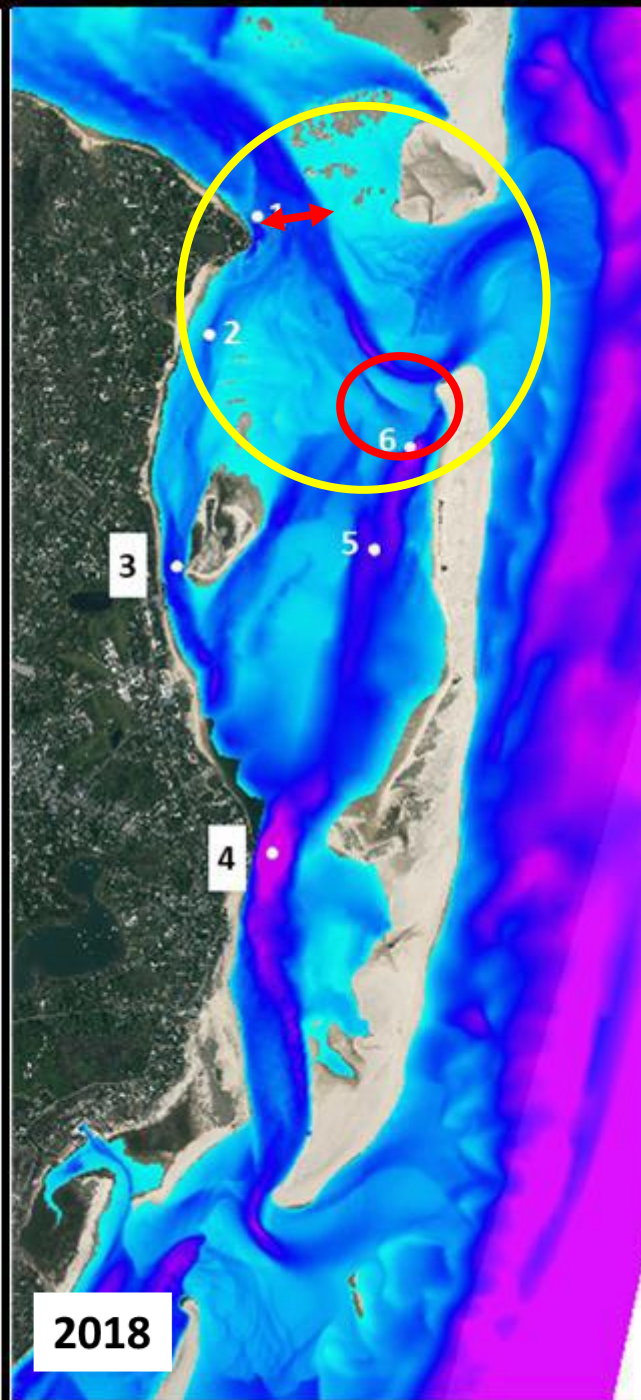
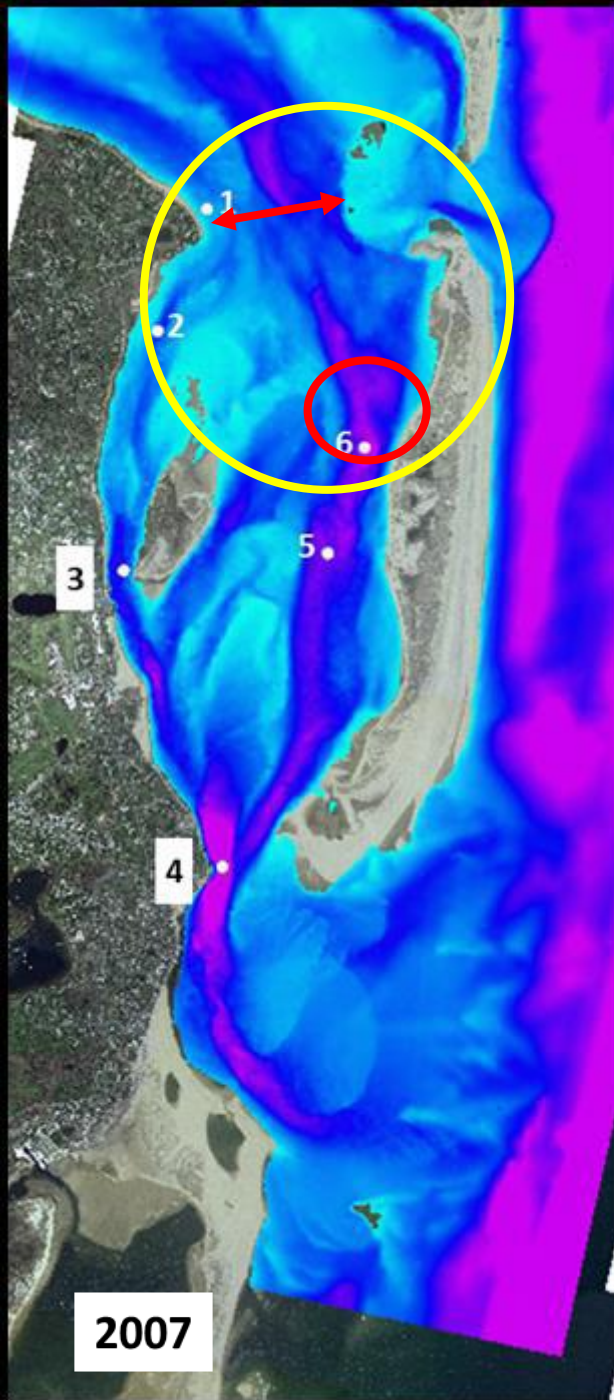
**Applied Coastal
Research and Engineering, Inc.**

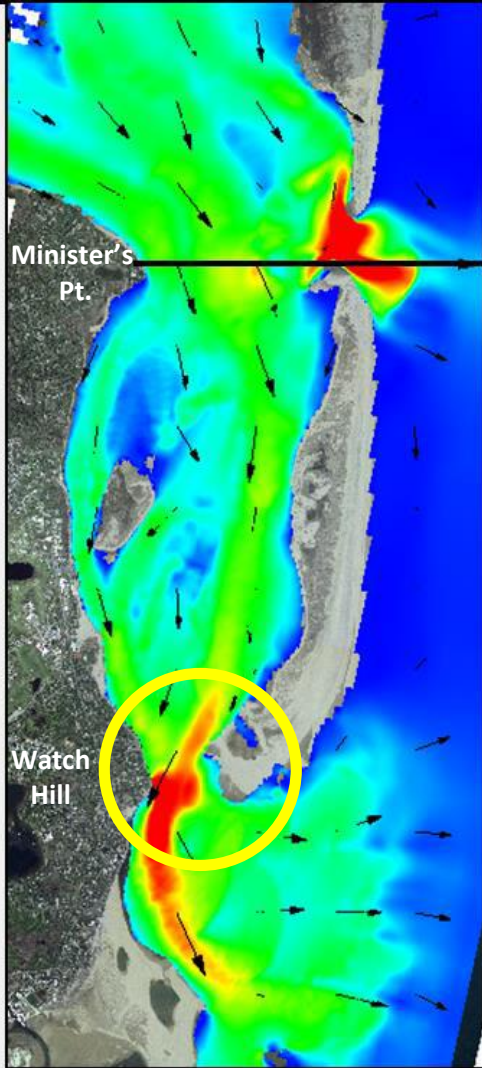


Center for Coastal Studies



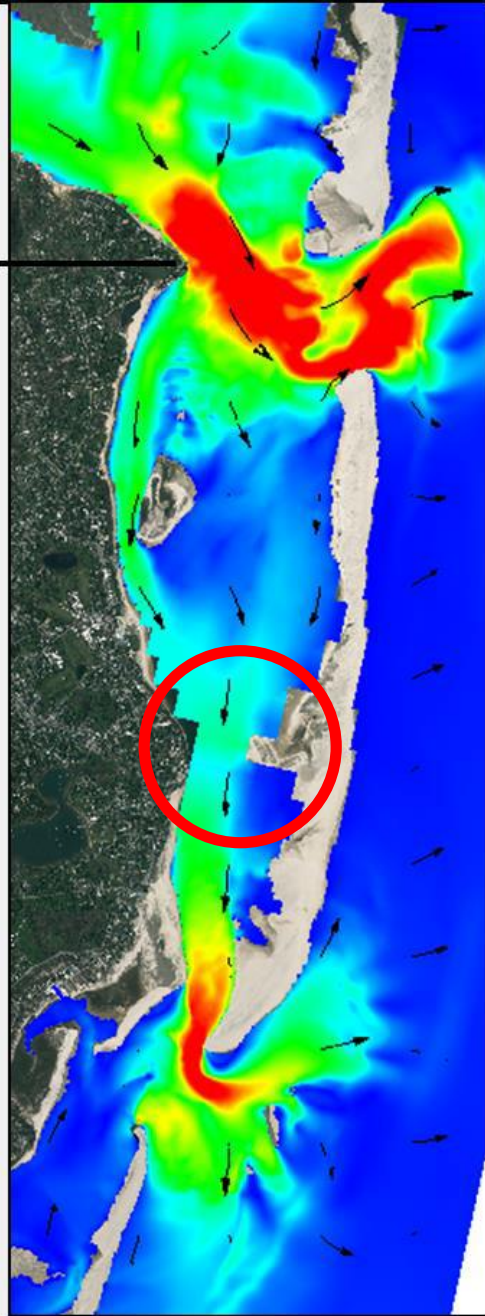
- **Final Report on Town Web Page**
- **Hard Copies:**
 - **Library**
 - **Town Hall**
 - **Town Hall Annex**
- **View Archive Video Presentation**
 - **June 27, 2019**





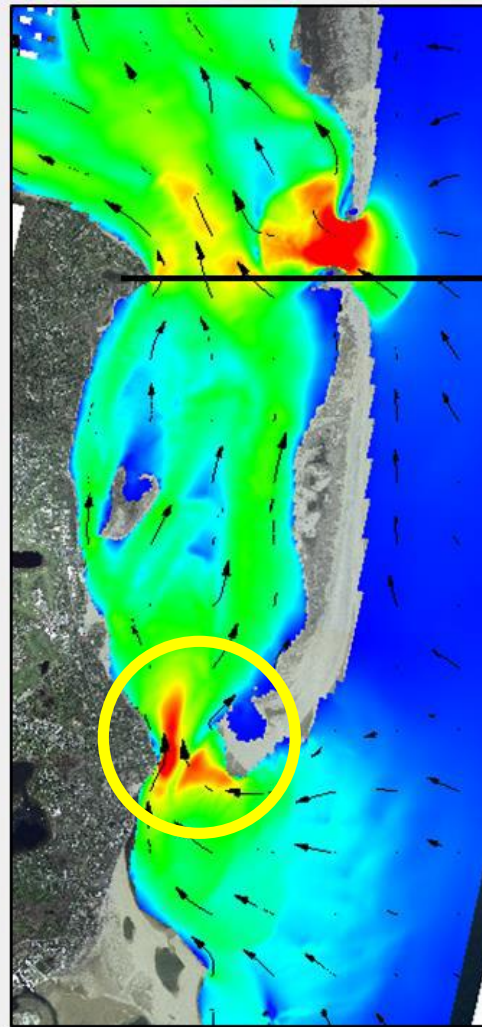
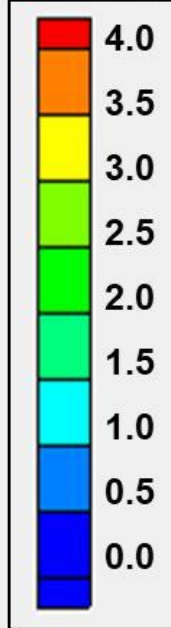
2007

Ebb Currents (Outgoing)



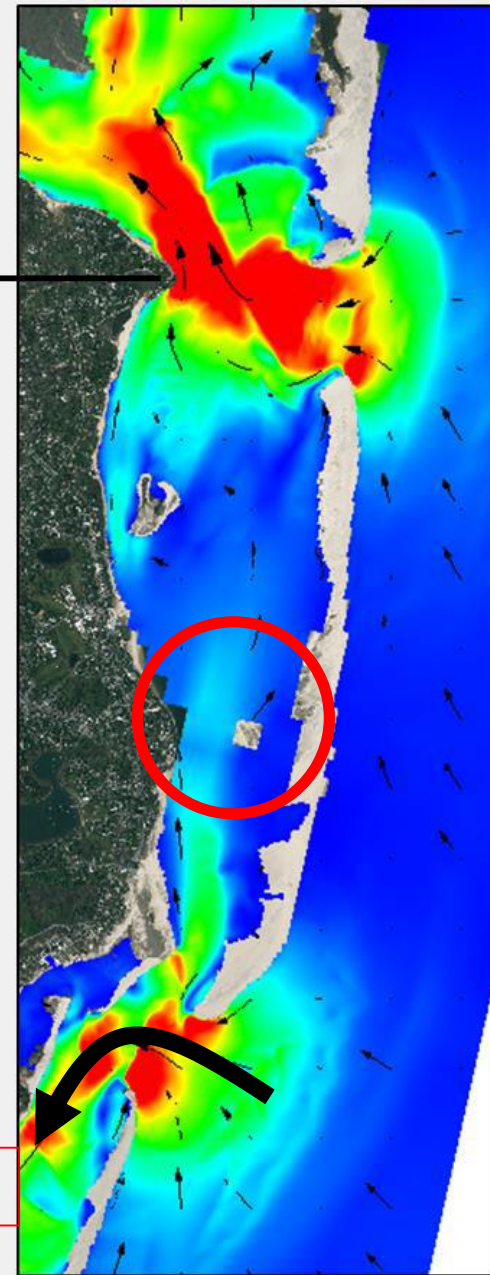
2018

Velocity ft/s



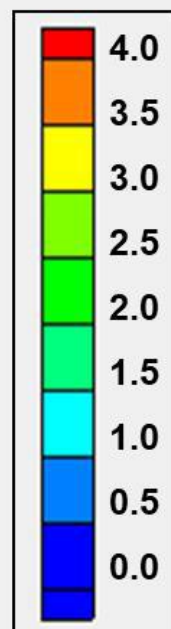
2007

Flood Currents (Incoming)



2018

Velocity ft/s





North Inlet

South Inlet

Atlantic Ocean

Stage Harbor

Morris Island

Monomoy

Nantucket Sound

October 31, 2015

North Inlet

Stage Harbor



June 23, 2019

Nantucket Sound

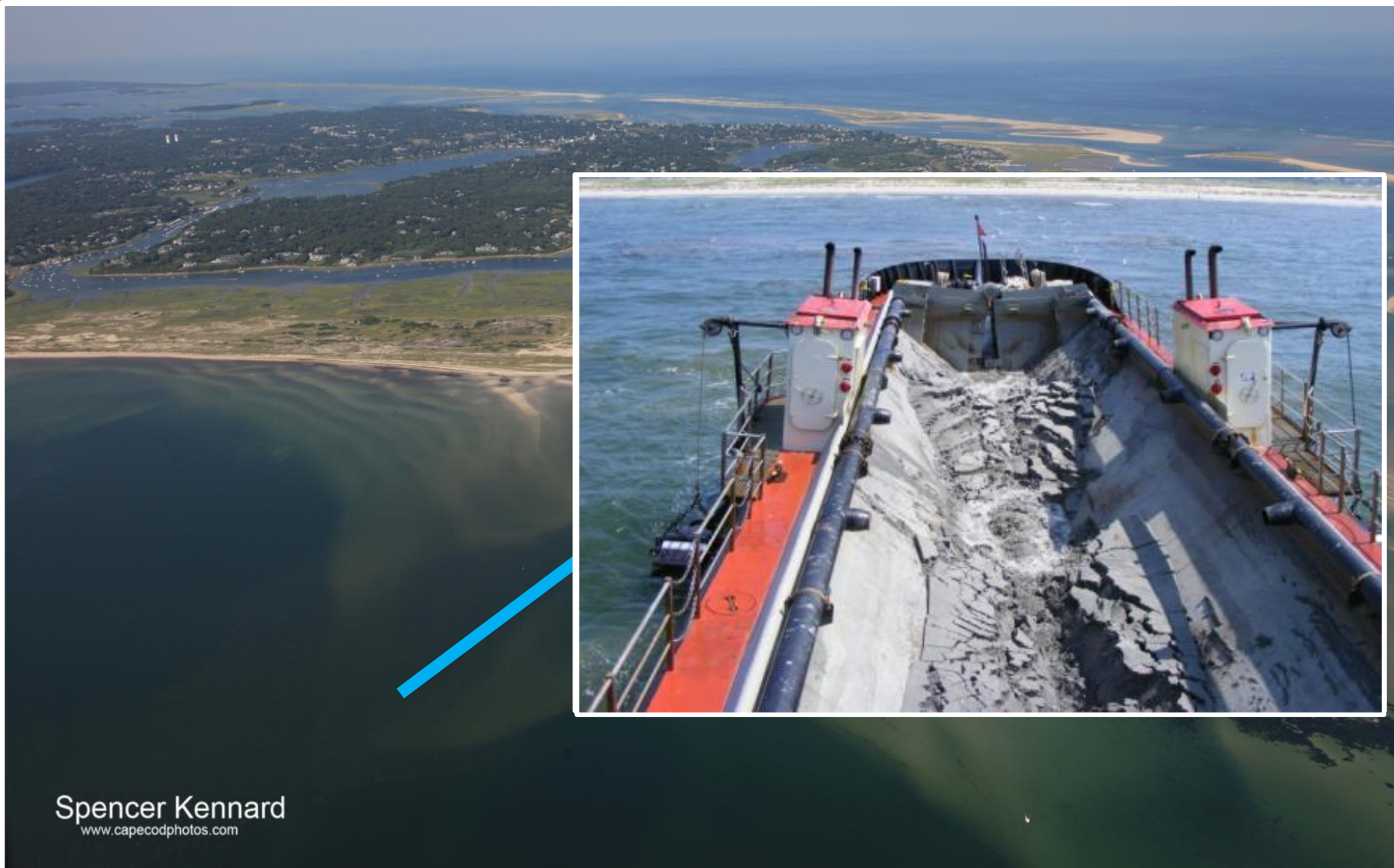
Nantucket Sound



October 19, 2019

Spencer Kennard
www.capecodphotos.com

Stage Harbor Federal Navigation Channel





Harwich

Chatham

Sediment Deficit

Numerous Jetties & Groin Fields

Mill Creek Inlet

West

Littoral Direction

East

Nantucket Sound



Hardings Beach- Erosion



July 2018

Spencer Kennard
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Cockle Cove Erosion



Beach Nourishment- Sand Sources



Shoreline Structures Assessment

Nantucket Sound

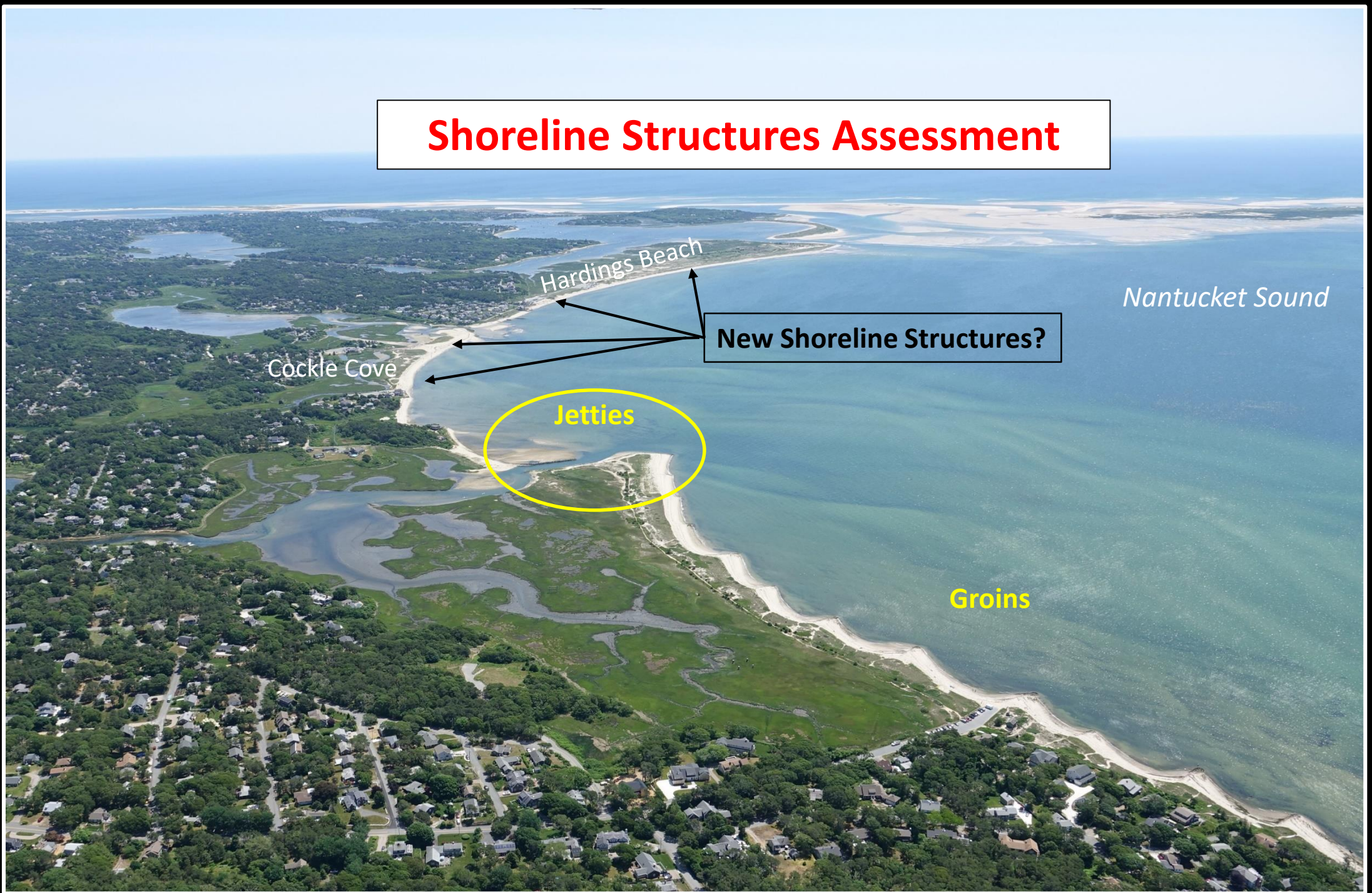
New Shoreline Structures?

Hardings Beach

Cockle Cove

Jetties

Groins



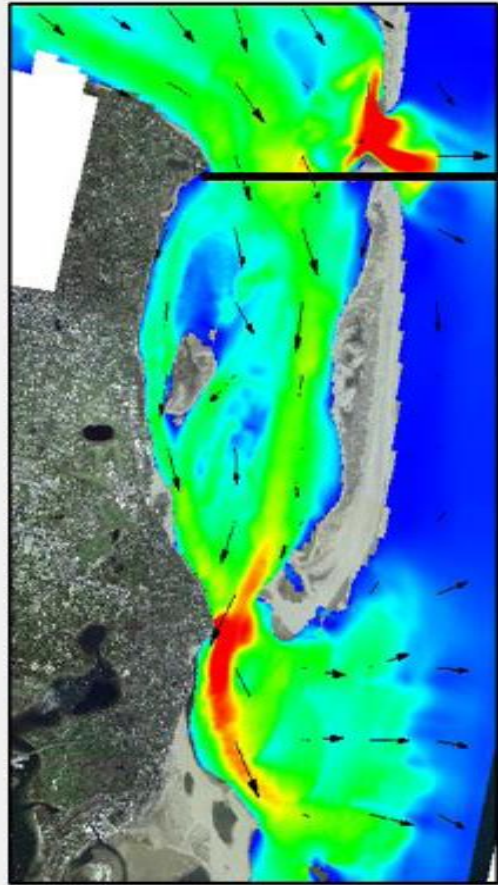
Thank You

Nantucket Sound

Atlantic Ocean



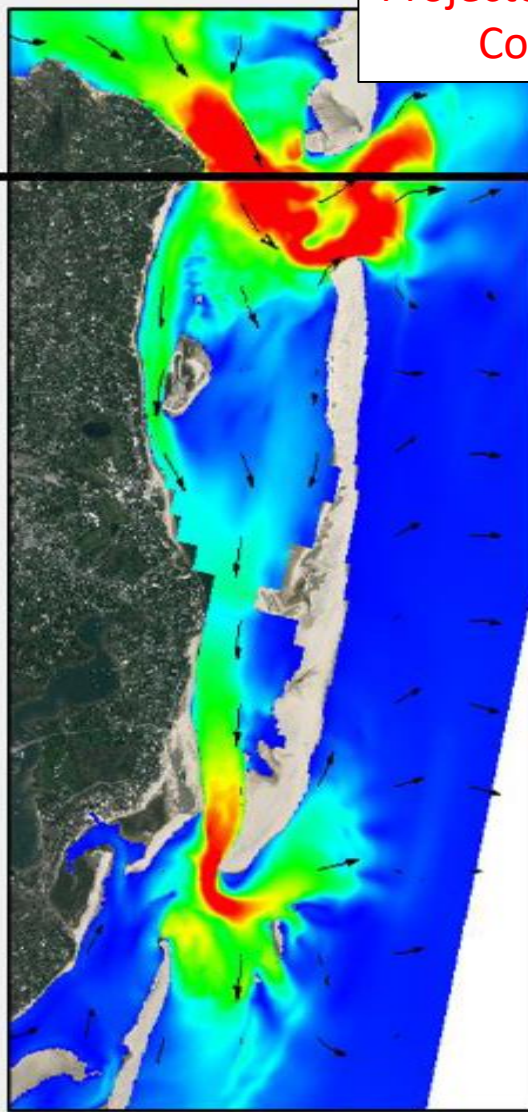




2007

Ebb Currents (Outgoing)

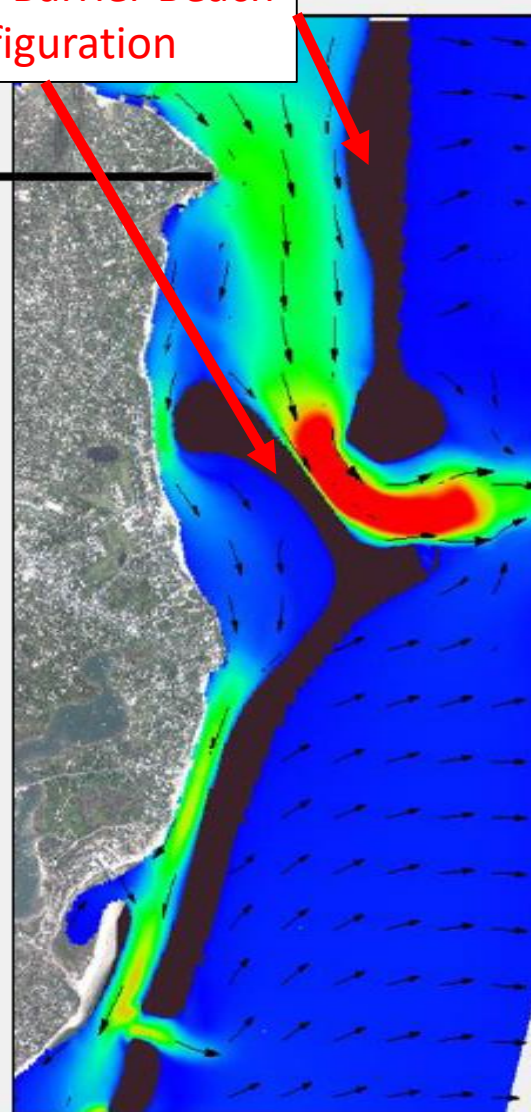
PAST



2018

PRESENT

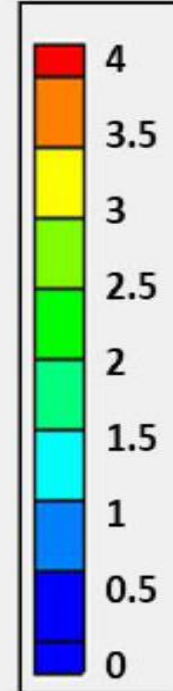
Projected Barrier Beach Configuration

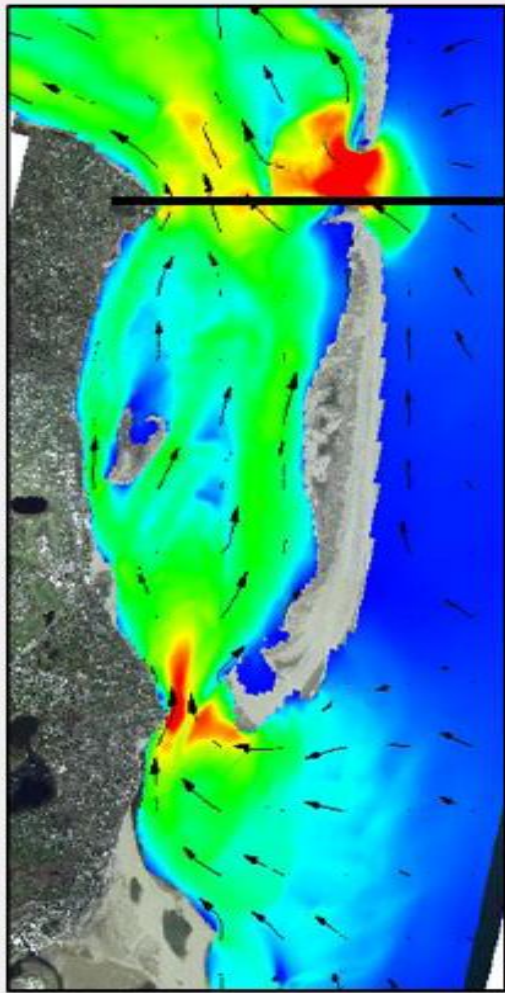


2045

FUTURE

Velocity (ft/s)

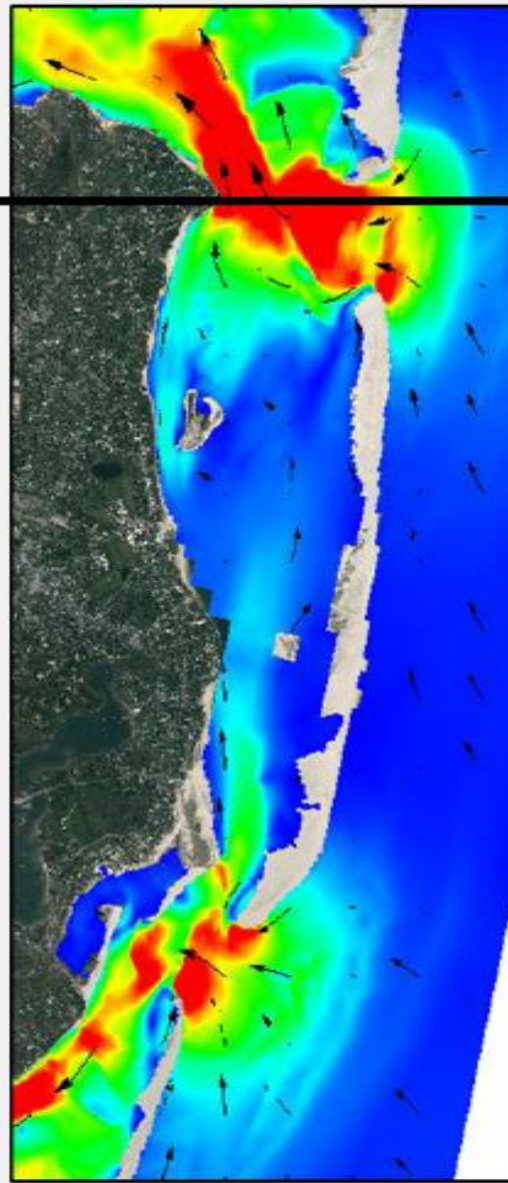




2007

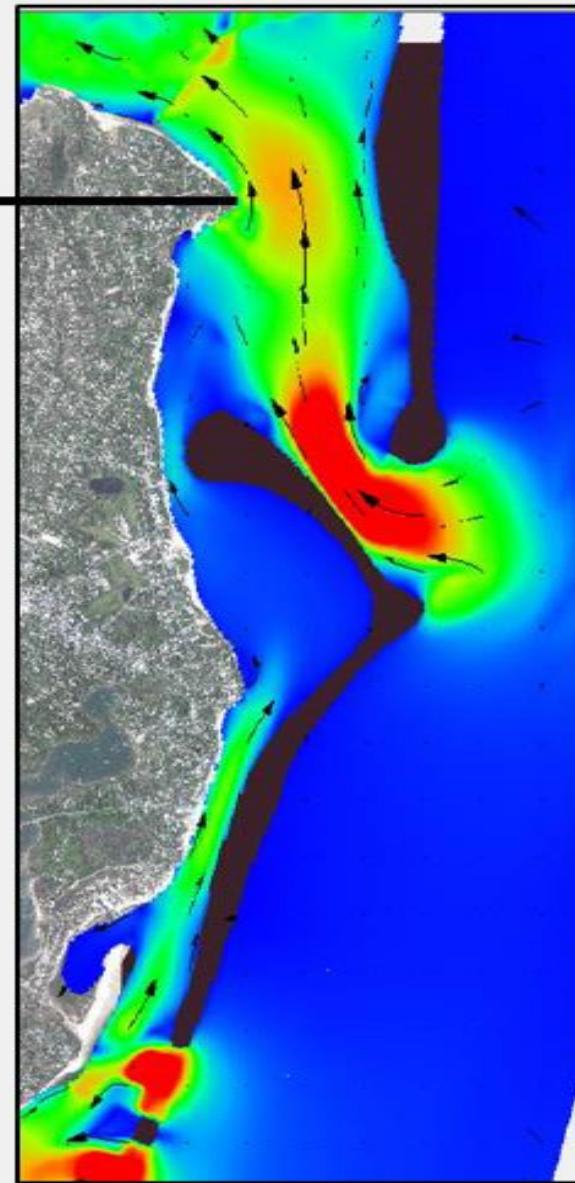
Flood Currents (Incoming)

PAST



2018

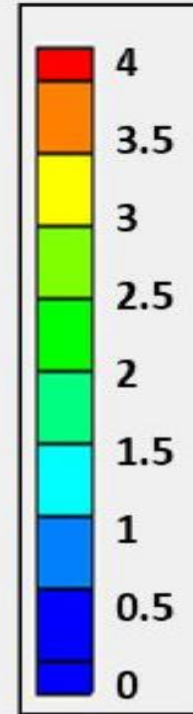
PRESENT



2045

FUTURE

Velocity
(ft/s)



Pleasant Bay/Bassing Harbor Dredging

Strong Island

Fox Hill

Bassing Harbor

September 1, 2018



Dredge

Booster Pump

Scatteree

November 12, 2018



Before



September 13, 2018

After



> 14,500 cys

November 19, 2018